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In re Application of  
TAKESHI ANZAI  
Serial NO.: 10/036,402  
Filed: January 7, 2002  
For: PORTABLE COMMUNICATION TERMINAL AND METHOD OF  
TRANSMITTING/RECEIVING E-MAIL MESSAGES

**TRANSLATOR'S DECLARATION**

Honorable Commissioner of Patents and Trademarks  
Washington, D.C. 20231

Sir:

I, Katsufumi Izumi, residing at 2nd floor, Suganuma Bldg., 20-6, Toranomom 1-chome, Minato-ku, Tokyo, Japan, certify that I am familiar with both the Japanese and English language, that I have prepared the English translation attached hereto of the certified copy of Japanese Patent Application No. 000667/2001 filed on January 5, 2001 and that the English translation is true, faithful and exact translation of the corresponding Japanese language application.

I further declare that all statement made in this declaration of my own knowledge are true and that all statements made on information and belief are believed to be true, that these statements were made with the knowledge that willful, false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United State Code and that such willful, false statements may jeopardize the validity of the application or any patent issued thereon.

Respectfully submitted,



Katsufumi Izumi  
Translator

Date: March 10, 2005

**JAPAN PATENT OFFICE**

This is to certify that the annexed is a true copy of the following application as filed with this office.

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Applicant(s): NEC Saitama Ltd.

January 11, 2002

Commissioner,

Japan Patent Office **KOZO OIKAWA**

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Attached Documents]

[Name of Document]      Specification      1

[Name of Document]      Drawings      1

[Name of Document]      Abstract      1

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[Proof]      Required

[Name of Document]            Specification

[Title of Invention]        PORTABLE    TELEPHONE    AND    METHOD    OF  
TRANSMITTING/REGENERATING E-MAIL MESSAGE

[What is claimed is]

    [Claim 1]

    A portable telephone with a function of transmitting e-mail,  
comprising:

        a character input means for inputting a character data  
for an e-mail message;

        an additional information input means for inputting  
additional information about expression for the character data;

        a transmission data generator means for converting the  
character data and the additional information to a transmission  
data; and

        a radio means for transmitting the transmission data as  
e-mail.

    [Claim 2]

    The telephone according to claim 1, wherein the character  
input means and the additional information input means comprise  
keys provided on the terminal.

    [Claim 3]

    The telephone according to claim 1, wherein the character  
input means and the additional information input means comprise

a microphone provided on the terminal.

[Claim 4]

The telephone according to claim 1, wherein the additional information input means inputs at least one of size, color, and font of characters.

[Claim 5]

The telephone according to claim 1, wherein the additional information input means inputs at least one of tone, stress, and intonation of voice.

[Claim 6]

A portable telephone with a function of receiving e-mail, comprising:

a radio means for receiving a reception data as e-mail;

a converter means for converting the reception data to a character data and additional information about expression of the character data;

a regenerator means for regenerating the character data with an expression according to the additional information.

[Claim 7]

The telephone according to claim 6, wherein the regenerator means displays characters corresponding to the character data while changing at least one of size, color, and font of the characters based on the additional information.

[Claim 8]

The telephone according to claim 6, wherein the regenerator means outputs a voice while changing at least one of tone, stress, and intonation of the voice based on the additional information.

[Claim 9]

A method of transmitting/regenerating e-mail messages using portable telephones, the method comprising the steps of:  
in a transmitting portable telephone;

inputting a character data for an e-mail message and additional information about expression of the character data;

converting the character data and the additional information to a transmission data; and

transmitting the transmission data as e-mail; and  
in a receiving portable telephone;

receiving the transmission data transmitted from the transmitting portable telephone as e-mail;

converting the transmission data to the character data and the additional information; and

regenerating the character data while changing the expression of the character data based on the additional information.

[Detailed Description of the Invention]

[0001]

[Field of the Invention]

The present invention relates to a portable telephone and a method of transmitting/regenerating e-mail messages and more particularly, to a portable telephone and a method of transmitting/regenerating e-mail messages which are preferably used for transmitting/receiving e-mail messages.

[0002]

[Prior Art]

In recent years, communication manners using portable communication terminals such as portable telephones have been diversifying. Responsive to this tendency, not only verbal or speech communication but also e-mail communication using portable terminals of this type have become popular so far. From this point of view, the improvement for e-mail communication performance has become more important for these terminals.

[0003]

Conventionally, for example, the Japanese Non-Examined Patent Publication No. 2000-299699 discloses a system and method for delivering e-mail on a portable communication terminal. This system has a purpose or intention to summarize the content or message of e-mail received to form a compact message, thereby making it possible for the user to read out the e-mail message on the narrow screen of a portable communication terminal. This system comprises



a character extracting means for extracting specific character strings from an e-mail message, and a summarizing means for summarizing the character strings extracted by the character extracting means to a compact message displayable on the screen of a portable communication terminal by converting the respective character strings thus extracted to compact characters or figures. The compact message thus formed is displayed on the screen of the terminal by a display means.

[0004]

[Problems to be solved by the Invention]

However, the above-described system for delivering e-mail disclosed by the Publication No. 2000-299699 has the following problems.

[0005]

Specifically, as described previously, not only speech communication but also e-mail communication using a portable telephone have become popular and thus, the performance improvement for e-mail communication has become more important for portable telephones. Usually, e-mail communication is carried out by transmitting and receiving a set of characters (i.e., a text) only. Therefore, the sender's message sent by e-mail has insufficient power of expression about the sender's feelings for the recipient, compared with speech communication. To decrease or relax this

disadvantage, pictorial symbols (e.g., so-called icons or emoticons) have often been added to the sender's message. However, there is a problem that the addition of pictorial symbols is still insufficient and dissatisfactory for the users of e-mail.

[0006]

On the other hand, there is a type of portable communication terminals having a function of reading the received e-mail message aloud with a speaker. However, this reading function produces and emits simply an audible sound or voice in a monotone according to the message. Thus, there is another problem that it is unable to say that the sender's feelings are satisfactorily expressed in the sound or voice thus emitted.

[0007]

An object of the present invention is to provide a portable telephone and a method of transmitting/regenerating e-mail messages that are capable of regenerating e-mail messages with a rich power of expression compared with messages consisting of characters only, by transmitting character data and additional information linked thereto about expression for the character data in the transmission side and by regenerating the character data and the additional information in the reception side.

[0008]

[Means for solving the Problems]

A portable telephone with a function of transmitting e-mail according to a first aspect of the invention comprises:

a character input means for inputting a character data for an e-mail message;

an additional information input means for inputting additional information about expression for the character data;

a transmission data generator means for converting the character data and the additional information to a transmission data; and

a radio means for transmitting the transmission data as e-mail.

[0009]

In the telephone according to the first aspect of the invention, the character input means and the additional information input means may comprise keys provided on the terminal.

[0010]

In the telephone according to the first aspect of the invention, the character input means and the additional information input means may comprise a microphone provided on the terminal.

[0011]

In the telephone according to the first aspect of the invention, the additional information input means may input at least one of size, color, and font of characters.

[0012]

In the telephone according to the first aspect of the invention, the additional information input means may input at least one of tone, stress, and intonation of voice.

[0013]

A portable telephone with a function of transmitting e-mail according to a second aspect of the invention comprises:

a radio means for receiving a reception data as e-mail;

a converter means for converting the reception data to a character data and additional information about expression of the character data; and

a regenerator means for regenerating the character data with an expression according to the additional information.

[0014]

In the telephone according to the second aspect of the invention, the regenerator means may display characters corresponding to the character data while changing at least one of size, color, and font of the characters based on the additional information.

[0015]

In the telephone according to the second aspect of the invention, the regenerator means may output a voice while changing at least one of tone, stress, and intonation of the voice based

on the additional information.

[0016]

A method of transmitting/regenerating e-mail messages using portable telephones according to the invention, comprises the steps of:

in a transmitting portable telephone;

inputting a character data for an e-mail message and additional information about expression of the character data;

converting the character data and the additional information to a transmission data; and

transmitting the transmission data as e-mail: and  
in a receiving portable telephone;

receiving the transmission data transmitted from the transmitting portable telephone as e-mail;

converting the transmission data to the character data and the additional information; and

regenerating the character data while changing the expression of the character data based on the additional information.

[0017]

If the portable telephone according to the invention is explained with reference to Fig. 1, the telephone has a configuration as follows.

The portable telephone 1 with a function of transmitting e-mail comprises a character input means 2 for inputting a character data for an e-mail message; an additional information input means 3 for inputting additional information about expression for the character data; a transmission data generator means 4 for converting the character data and the additional information to a transmission data; and a radio means 5 for transmitting the transmission data as e-mail.

[0018]

[Action]

With the portable telephone according to the invention, if the user of the telephone (i.e., the sender) wants to send an e-mail message to a desired recipient, the user inputs desired characters to make his/her e-mail message, forming a character data for the message. Moreover, the user inputs additional information about a desired expression for the character data according to the user's intention. The character data and the additional information are linked together, forming a transmission data. The transmission data thus formed is then transmitted to a desired recipient. On the other hand, the recipient receives the transmission data from the sender and regenerates the character data and the additional information from the transmission data. As a result, the character data contained in the e-mail message

can be regenerated with a rich power of expression compared with messages consisting of characters only.

[0019]

[Embodiments of the Invention]

(First Embodiment)

Next, a first embodiment of the present invention will be described in detail below while referring to the drawings attached.

[0020]

(1) Explanation of Configuration

As shown in Fig. 1, a transmitting portable telephone 1 according to the first embodiment comprises a character data input device 2, an additional information data input device 3, a transmission data generator circuit 4, and a radio unit or device 5. A receiving portable telephone 6 comprises a radio unit or device 7, a reception data regenerator circuit 8, a character data/additional information display device 9, a character/information-voice converter 10, and a voice generator 11. The reference numeral 30 denotes a communications network.

[0021]

First, the first embodiment will be explained roughly. In the first embodiment, when transmitting an e-mail message with a portable telephone, the user of the telephone 1 in the transmitting

side inputs not only character data for a message into the telephone 1 by the use of the character data input device 2 but also additional information for the message (i.e., the character data) by the use of the additional information input device 3. The transmission data generator circuit 4 links the character data and the additional information thus inputted together, thereby generating a transmission data. When regenerating the e-mail message with a portable telephone, the user of the telephone 6 in the receiving side regenerates the transmission data thus received by the reception data regenerator circuit 8, thereby displaying the character data with an expression according to the additional information. Thus, the character data contained in the e-mail message can be regenerated with a rich power of expression.

[0022]

Next, the first embodiment will be explained in detail. Referring to Fig. 1, the portable telephone 1 in the transmitting side transmits an e-mail message containing characters and the portable telephone 6 in the receiving side receives the message. Referring to Fig. 2, the transmitting telephone 1 comprises a character data input device 2 for inputting a character data for an e-mail message, an additional information input device 3 for inputting additional information for the character data, a transmission data generator circuit 4 for converting the character



data and the additional information to a transmission data according to RCR-27 as a standard of the TDMA (Time-Division Multiple Access) method, and a radio device 5 for transmitting the transmission data as e-mail toward a network 30.

[0023]

As shown in Fig. 3, the character data input device 2 provided on the portable telephone 1 in the transmitting side is typically realized by using keys 15 equipped on the telephone itself 1. An embodiment of the device 2 is a character data input device 14 shown in Fig. 3. Similarly, the additional information input device 3 is typically realized by using keys 17 equipped on the telephone itself 1. An embodiment of the device 3 is an additional information input device 16 shown in Fig. 3.

[0024]

Referring to Fig. 4, the portable telephone 6 in the receiving side comprises a radio device 7 for receiving a reception data from the network 30, a reception data regenerator circuit 13 for converting the reception data to the character data and the additional information, a display device 9 for displaying the character data and the additional information, a converter circuit 10 for converting the character data and the additional information to a voice data as an alternative of reproduction, and a voice reproduction device 11 for reproducing the voice data in the form

of voice.

[0025]

## (2) Explanation of Operation

Next, the operation of the first embodiment will be explained in detail below with reference to Figs. 1 to 4.

[0026]

First, the operation of the portable telephone 1 in the transmission side will be explained with reference to Fig. 2. For example, when the user or sender wants to send an e-mail message containing the characters "HELLO", the user inputs these characters into the telephone 1 itself by the use of the character data input device 2. Also, the user successively inputs additional information data1 corresponding to the character "H", additional information data2 corresponding to the character "E", ..... into the telephone 1 itself by the use of the additional information input device 3. These input operations of the character data and the additional information are realized by using the keys 15 of the input device 14 and the keys 17 of the input device 16, respectively, as shown in Fig. 3.

[0027]

The additional information for the character data is used to designate the size of the characters. Specifically, for example, the sizes of the characters applicable to e-mail messages is divided

into nine groups or steps in an ascending order and at the same time, these nine groups of the character size are assigned to the numeric keys "1" to "9", respectively. In this case, the user can input desired sizes of the characters used in an e-mail message into the telephone 1 as his/her desired additional information for the message by successively operating the keys "1" to "9".

[0028]

In the transmission data generator circuit 4, the character data A inputted by the input device 2 and the additional information for the data A inputted by the input device 3 are linked with each other. Moreover, the character data A thus linked to the additional information is converted to a transmission data having the format according to the RCR-27 standard by the transmission circuit 12 in the transmission data generator circuit 4. The transmission data thus obtained is then transmitted with the radio device 5.

[0029]

Subsequently, the operation of the portable telephone 6 in the reception side will be explained with reference to Fig. 4. The data received by the radio device 7 of the receiving telephone 6 is regenerated by the receiver circuit 13 in the reception data regenerator circuit 8, resulting in the character data A linked to the additional information transmitted from the telephone 1 in the transmission side.

[0030]

In the display device 9, the character data A linked to the additional information is displayed. At this time, the character data A can be displayed to have specific modification according to the additional information linked. For an example, the sizes of the characters displayed are changed according to the additional information. Instead of modification on the size of the characters, colors and/or fonts of the characters may be linked thereto as the additional information. In this case, compared with an e-mail message consisting of characters only, the power of expression for e-mail messages can be raised.

[0031]

As a regeneration manner of the character data A with the additional information linked thereto, the function of reading out characters may be used. In this case, the character data A with the linked additional information is converted to a voice signal or data by the character/information-voice converter 10. If so, with the voice reproduction device 11, the character data A can be regenerated in the form of voice to have specific audio modification according to the additional information linked. For example, the voice data is regenerated to have specific tone, stress, accent, and intonation of voice according to the additional information linked. In this case, the power of expression for the

e-mail message in the form of voice can be improved.

[0032]

As explained above, with the first embodiment of the invention, the user of the telephone 1 in the transmission side (i.e., the sender) makes the transmission data for an e-mail message by linking the additional information about a desired expression to the desired character data, thereby generating the transmission data. Then, the said user transmits the transmission data thus made to a desired recipient. The user of the telephone 6 in the reception side (i.e., the recipient) receives the transmission data and regenerates the same, thereby displaying the sender's character data with the modification according to the additional information. As a result, there is an advantage that the character data contained in the sender's e-mail message can be reproduced by the recipient with a rich power of expression, compared with messages consisting of characters only.

[0033]

(Second Embodiment)

Next, a second embodiment of the present invention will be described in detail below while referring to the drawings attached.

[0034]

(1) Explanation of Configuration

As shown in Fig. 5, a transmitting portable telephone according to the second embodiment comprises a character data/additional expression data input device 18. This device includes a microphone 19, an analog-to-digital (A/D) converter 22, a voice recognizer circuit 20, and an input level analyzer circuit 21, in addition to the radio device and the transmission data generator circuit (both not shown).

[0035]

Explaining the second embodiment roughly, the A/D converter 22 receives the analog voice signal from the microphone 19 and converts it to a digital voice signal. The voice recognizer circuit 20 receives the digital voice signal from the converter 22 and recognizes the characters represented by the digital voice signal, thereby forming the character data. The input level analyzer circuit 21 receives the digital voice signal from the converter 22 and analyzes the level of the voice signal, thereby forming the additional expression data.

[0036]

## (2) Explanation of Operation

Next, the operation of the second embodiment will be explained in detail below with reference to Fig. 5.

[0037]

With the above-described first embodiment, as the manner

for the input operations of the character data and the additional information, the use of the keys 15 of the input device 14 and the keys 17 of the input device 16 has been explained with reference to Fig. 3. On the other hand, with the second embodiment, the character data is regenerated by recognizing the characters represented by the voice signal inputted by way of the microphone 19 by the use of the voice recognizer circuit 20. Moreover, the input level analyzer circuit 21 analyzes the input level of the voice signal inputted by way of the microphone 19, thereby regenerating the additional information for the character data A. Thus, the difference in intensity of the user's voice can be regenerated in the reception side.

[0038]

With the second embodiment, as explained above, there is an advantage that the character data contained in the e-mail message can be regenerated with a rich power of expression.

[0039]

(Third Embodiment)

Next, a third embodiment of the present invention will be described in detail below.

[0040]

(1) Explanation of Configuration

A transmitting portable telephone according to the third

embodiment comprises a character data/additional expression data input device (not shown). This character data/additional expression data input device includes a microphone, an (A/D) converter, a voice recognizer circuit, and a frequency analyzer circuit, in addition to the radio device and the transmission data generator circuit (all of which are not shown).

[0041]

Explaining the third embodiment roughly, the frequency analyzer circuit receives the voice signal inputted by way of the microphone and analyzes the frequency of the voice signal, thereby forming the additional information for the character data.

[0042]

## (2) Explanation of Operation

With the third embodiment, to regenerate the additional expression data for the character data A, the frequency analyzer circuit is used instead of the input level analyzer circuit 21 as used in the above-described second embodiment and shown in Fig. 5. Thus, the voice data is regenerated to have specific tone and intonation according to the additional information in the reception side.

[0043]

With the third embodiment, as explained above, the voice data is regenerated to have specific tone and intonation. Thus,



there is an advantage that the character data contained in the e-mail message can be regenerated with a rich power of expression.

[0044]

Additionally, with the above-described first to third embodiments, the transmission operation of the portable telephone in the transmission side and the reception operation of the portable telephone in the reception side are explained. However, this is for the sake of explanation. It is needless to say that the portable telephone comprises both of the transmission and reception functions.

[0045]

[Advantages of the Invention]

With the present invention, as described above, in a transmitting portable telephone, a character data for an e-mail message and additional information about expression of the character data are inputted, the character data and the additional information are converted to a transmission data, and the transmission data thus obtained is transmitted as e-mail. In a receiving portable telephone, the transmission data transmitted from the transmitting portable telephone as e-mail is received, the transmission data is converted to the character data and the additional information, and the character data is regenerated while changing the expression of the character data based on the additional

information. In other words, the sender of an e-mail message links specific additional information to the character data corresponding to his/her e-mail message according to his/her desired expression manner, and then, transmits the character data and the additional information to the recipient. In response, the recipient regenerates the character data and the additional information. As a result, there is an advantage that the character data contained in the e-mail message can be regenerated with a rich power of expression compared with messages consisting of characters only.

[Brief Description of the Drawings]

[Fig. 1]

Fig. 1 is a functional block diagram showing a configuration of a portable telephone in the transmission side and that of a portable telephone in the reception side according to a first embodiment of the present invention.

[Fig. 2]

Fig. 2 is a functional block diagram showing the detailed configuration of the portable telephone in the transmission side according to the first embodiment of the present invention.

[Fig. 3]

Fig. 3 is a functional block diagram showing the detailed configurations of the character data input device and the additional

information input device of the portable telephone in the transmission side according to the first embodiment of the present invention.

[Fig. 4]

Fig. 4 is a functional block diagram showing the detailed configuration of the portable telephone in the reception side according to the first embodiment of the present invention.

[Fig. 5]

Fig. 5 is a functional block diagram showing the detailed configurations of the character data/additional information input device of the portable telephone in the transmission side according to a second embodiment of the present invention.

[Description of Reference Symbols]

- 1: portable telephone in the transmission side
- 2: character data input device
- 3: additional information data input device
- 4: transmission data generator circuit
- 5: radio device
- 6: portable telephone in the reception side
- 7: radio device
- 8: reception data regenerator circuit
- 9: character data/additional information input device
- 10: character/information-voice converter circuit

11: voice regenerator  
15, 17: key  
19: microphone  
20: voice recognition circuit  
21: input level analyzer circuit

[Name of Document]

Abstract

[Abstract]

[Subject]

It is to provide a portable telephone and a method of transmitting/regenerating e-mail messages that are capable of regenerating e-mail messages with a rich power of expression.

[Solution]

A portable telephone 1 in the transmission side comprises a character data input device 2 for inputting a character data for an e-mail message, an additional information input device 3 for inputting additional information about expression for the character data, a transmission data generator circuit 4 for converting the character data and the additional information to a transmission data, and a radio device 5 for transmitting the transmission data as e-mail. A portable telephone 6 in the reception side comprises a radio device 7 for receiving the transmission data, a reception data regenerator circuit 8 for converting the transmission data to the character data and the additional information, a regenerator means for regenerating the character data with an expression according to the additional information, a character data/additional information display device 9 for displaying the character data and the additional information while changing the size, color, or font of the characters

based on the additional information, a voice regenerator 11 for regenerating voice while changing the tone, stress, or intonation of the voice based on the additional information.

[Selected Drawing]      Fig. 1

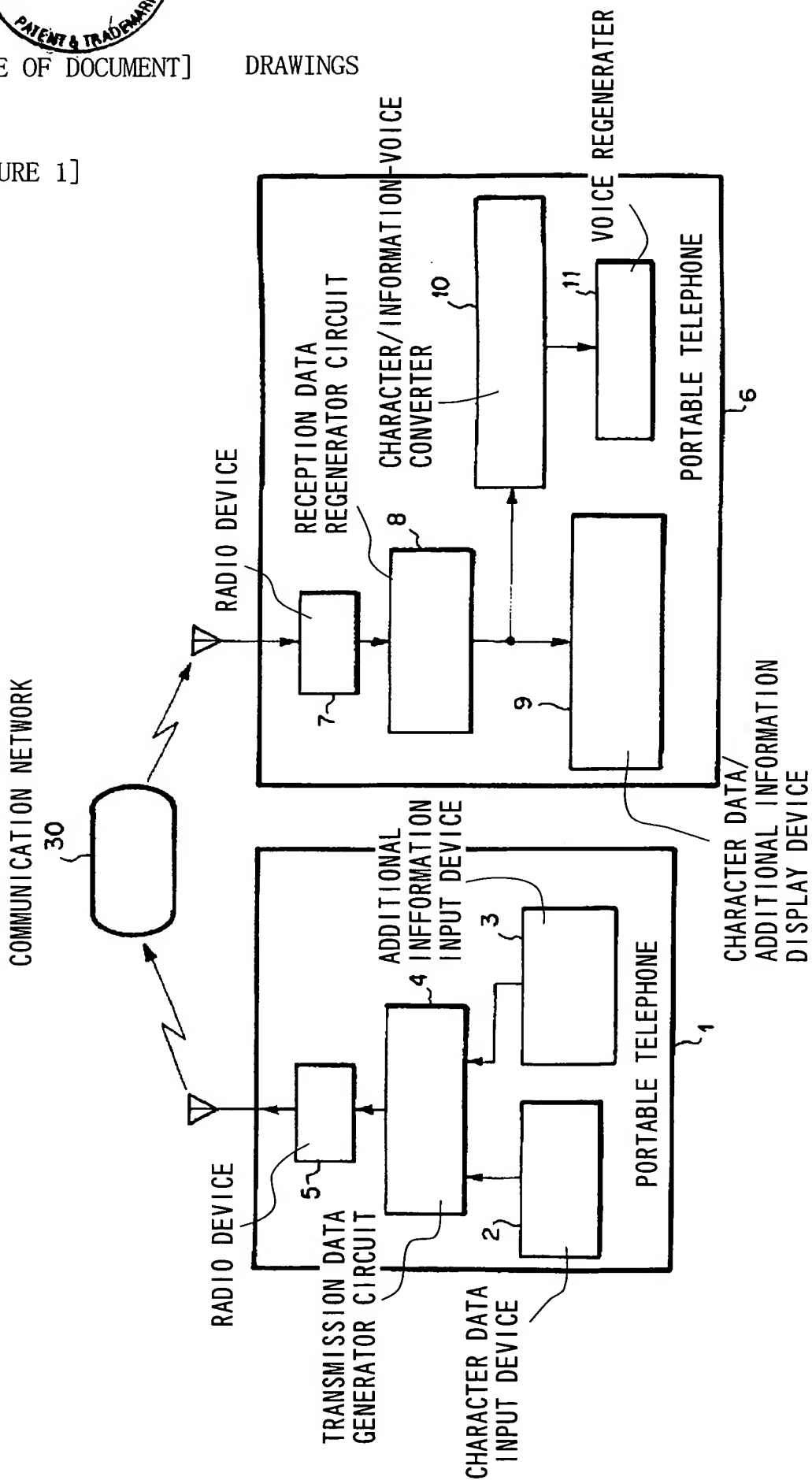
Record of Applicant(s)

Discrimination No.	[390010179]
1. Date of Change	September 21, 1990
[Reason for Change]	Initial Registration
Address	300-18, Aza Toyohara, Oaza Motohara, Kamikawamachi, Kodama-gun, Saitama, Japan
[Name]	NEC Saitama Ltd.

[NAME OF DOCUMENT]

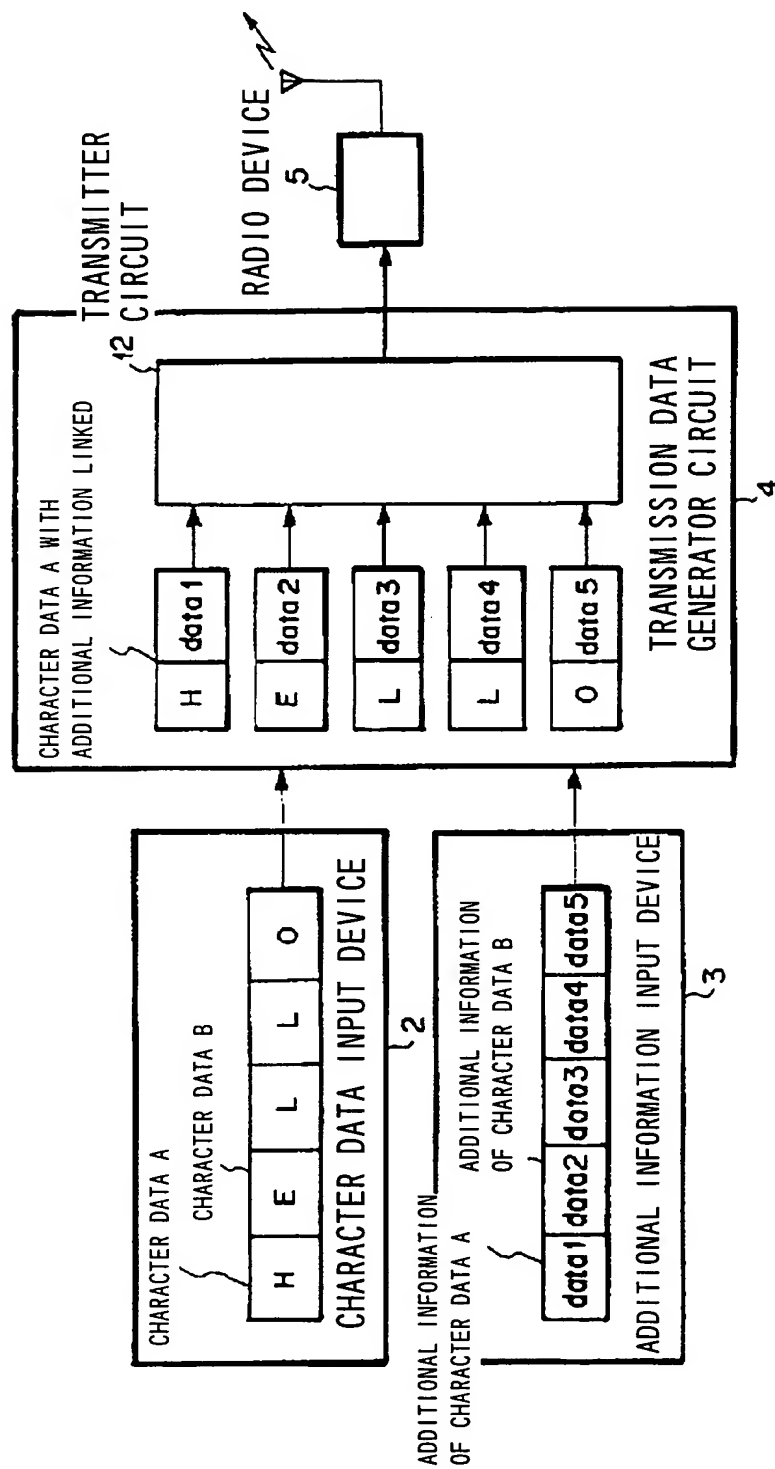
DRAWINGS

[FIGURE 1]



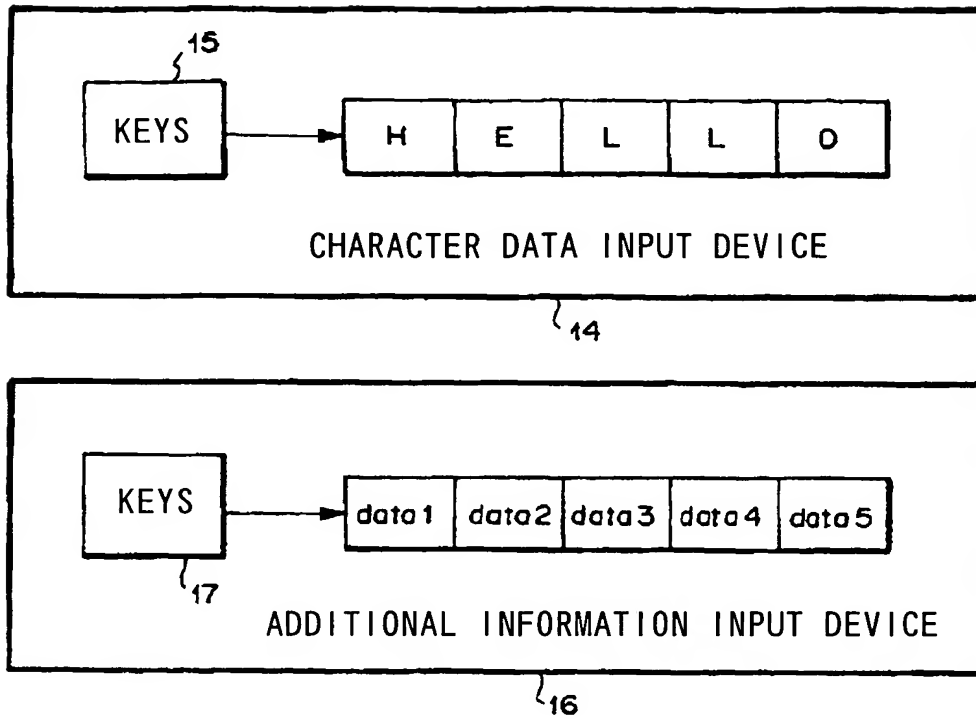


[FIGURE 2]

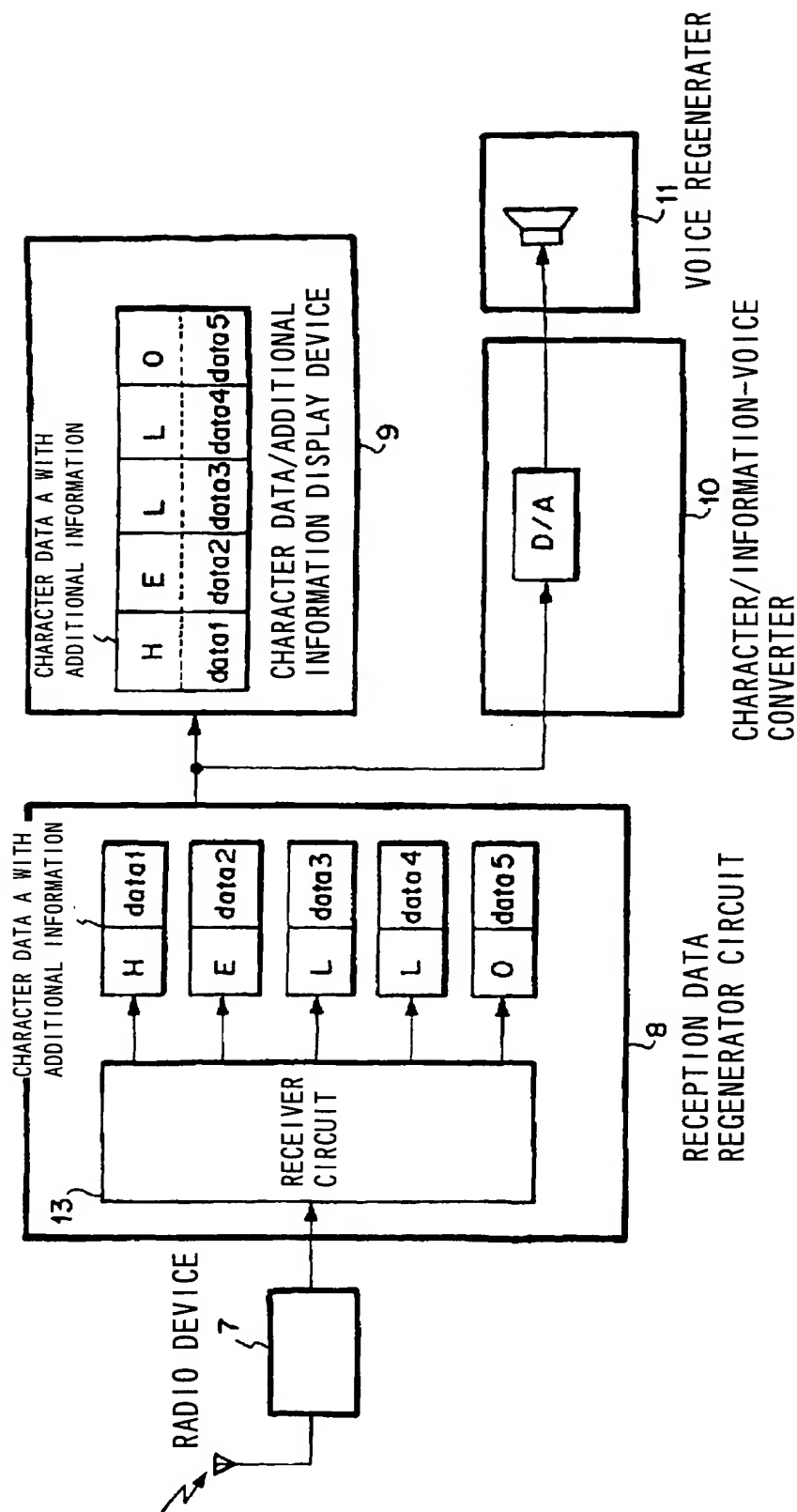




[FIGURE 3]



[FIGURE 4]





[FIGURE 5]

